Racial/Ethnic Differences in Smoking, Drinking, and Illicit Drug Use among American High School Seniors, 1976–89

ABSTRACT

Background. This paper reports racial/ethnic differences in the use of licit and illicit drugs by high school seniors in the United States.

Methods. The study uses questionnaire data from annual, nationally representative surveys of seniors from 1976 through 1989. Combined sample sizes were 57,620 for 1976–79; 75,772 for 1980–84; and 73,527 for 1985–89.

Results. Native Americans had the highest prevalence rates for cigarettes, alcohol, and most illicit drugs; White students had the next highest rates for most drugs. Asian Americans had the lowest prevalence rates, and Black students had levels nearly as low except for marijuana. Prevalence rates for the Hispanic groups were mostly in the intermediate ranges except for relatively high cocaine use among the males. Trend patterns for most forms of drug use were similar across subgroups, although cigarette use declined more sharply for Black than White seniors, resulting in greater Black-White differences in recent years.

Conclusions. This study, other school-based studies, and general population surveys all show relatively low levels of drug use by most non-White youth, especially Black Americans and Asian Americans. Multivariate analyses indicate that such subgroup differences in high school seniors' drug use are not primarily attributable to family composition, parents' education, region, or urban-rural distinctions. (*Am J Public Health* 1991;81:372–377)

Jerald G. Bachman, PhD, John M. Wallace, Jr., MA, Patrick M. O'Malley, PhD, Lloyd D. Johnston, PhD, Candace L. Kurth, MPH, and Harold W. Neighbors, PhD

Introduction

Drug use among American youth continues to be a focus of attention for politicians, educators, the media, and the general public. Although the media frequently focus on large cities, the nation's drug problems are not limited to any one group or to any one geographic area. The impacts of drug use and abuse are felt more keenly in the Black, Hispanic, and Native American communities,[1] but the patterns of drug use by members of these groups, particularly adolescents, are not well documented. The purposes of the present report are: to document the extent to which drug use varies among racial/ethnic subgroups of high school seniors; to explore whether subgroup differences have been changing in recent years; and to consider some of the implications of such differences.

The data reported here are based on samples of high school seniors, representative of the United States as a whole. The study does not undertake to explore substantial differences in drug use which may exist from one city to another, or from one neighborhood to another. More importantly, surveys of high school seniors do not include those youth who drop out before graduation; thus, although this report represents most young people, including the majority of those in each racial/ethnic subgroup studied, it does not cover the total cohort of 17- to 18-year-olds. These limitations are treated at some length in the discussion.

Methods

The Monitoring the Future project, conducted by the University of Michigan's Institute for Social Research under grants from the National Institute on Drug Abuse, has surveyed large, nationally representative samples of high school seniors during the spring of each year since 1975. The design and procedures are summarized briefly below; detailed descriptions are presented elsewhere.[2–4] The measures of drug use and racial/ethnic identification are presented in the Appendix.

Samples

A three-stage sampling procedure is employed,[5] with stage 1 the selection of particular geographic areas, stage 2 the selection of one or more high schools in each area, and stage 3 the selection of seniors within each high school. The result each year is an area probability sample of the 48 coterminous states. About 130 high schools participate each year (approximately 118 public and 12 private). About 83 percent of the sampled seniors generally participate (nearly all nonparticipation results from absenteeism), yielding samples of about 17,000 seniors each year.

Survey Procedures

Data are collected via questionnaires administered in classrooms by locally based Institute for Social Research representatives and their assistants, following carefully standardized procedures. The questionnaires are designed for optical scanning; all items are closed-ended. Five different questionnaire forms have been

From the Institute for Social Research, University of Michigan. Address reprint requests to Jerald G. Bachman, PhD, Institute for Social Research, University of Michigan, Ann Arbor, MI 48106-1248.

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TABLE 1—Racial/Ethnic Distribution of the Monitoring the Future Combined Samples*

	1976–79		1980–84		1985–89	
	N	%	N	%	N	%
White	48993	85.0	62157	82.0	57864	78.7
Black	5965	10.4	8958	11.8	8187	11.1
Mexican American	1088	1.9	1480	2.0	3117	4.2
Puerto Rican/Latin American	572	1.0	1105	1.5	1392	1.9
Asian American	439	0.7	1139	1.5	1899	2.6
Native American	563	1.0	933	1.2	1068	1.5
Total	57620	100.0	75772	100.0	73527	100.0

*The multistage sampling design with respondents clustered in schools produces larger sampling errors than would a simple random sample of equivalent size. For statistics in the present paper, the estimated design effects are 8.0 for White males and females, 3.0 for Black males and females, and 2.2 for the males and females in any of the other groups. Frequencies used to calculate statistical significance are equal to the actual number of cases shown in the table divided by the appropriate design effect (i.e., 8.0, 3.0, or 2.2). When referring to group differences the term "significant" or "significantly" refers to $p < .01$.

used each year, with each administered to a random one-fifth of the sample.

Statistical Significance and Confidence Intervals

Confidence intervals vary greatly depending upon sample size, design effects (see note to Table 1), and percentage size. As examples and general guidelines, we note the following: The *largest* 95% confidence intervals around percentages in Tables 2–4 are 1.7 percent for Whites, 2.8 for Blacks, 3.7 for Mexican Americans, and 6.3 for Native Americans (the smallest subgroup). Any Black-White difference equal to or exceeding 3.0 percent is significant at the 95% confidence level. It would be unnecessarily cumbersome to specify significance levels for every subgroup comparison discussed herein; instead, we have adopted the convention of describing *as differences* only those which exceed the 99% confidence level.

Results

Our primary emphasis is upon racial/ethnic subgroup differences in drug use, especially those which have been somewhat consistent across time. We examined annual data from the senior classes of 1976 through 1989, combining the classes into three groups: 1976–79, 1980–84, and 1985–89. The resulting numbers of cases for the total samples and the racial/ethnic subgroups are displayed in Table 1.

Table 1 indicates that the proportions of Whites in the samples decreased over time, whereas the proportions of Asian Americans and Hispanics increased substantially. These changes generally parallel shifts in the overall population of youth, although it should be kept in mind that the proportions in our samples reflect some substantial subgroup differences in high school dropout rates, as well as other differences (including a somewhat higher rate of missing data for several of the subgroups other than White). In particular, it should be noted that nationwide dropout rates for Blacks have declined in recent years, and are now only slightly higher than those for Whites.[6]

Subgroup Differences in Prevalence of Drug Use

Marijuana

Annual prevalence rates for marijuana (1985–89 combined; see Table 2) are highest among Native American females and males, and nearly as high among White males and females, and Mexican American males; rates are somewhat lower for Mexican American females, Puerto Rican and other Latin American males, and Black males; and rates are lowest among Puerto Rican and other Latin American females, Black females, and Asian American males and females. Monthly and daily (or nearly daily) prevalence rates for marijuana show similar subgroup distinctions, except that male-female differences are more pronounced (Tables 3 and 4).

Cocaine

Prevalence rates for cocaine are highest for Native Americans (males and females) and males in both Hispanic groups, but significantly lower for Hispanic fe-

TABLE 2—Annual Prevalence of 13 Types of Drugs, 1985–89 Data Combined, by Sex and Race

	Percent who used in last 12 months											
Types of Drugs	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(29808)	(4499)	(1599)	(712)	(917)	(531)
Marijuana/Hashish	40.2	29.8	37.3	30.6	19.6	42.0	36.0	18.4	26.0	21.3	17.1	44.0
Inhalants[a]	8.8	2.6	6.0	5.1	4.8	9.6	5.2	2.2	4.3	2.9	3.2	4.4
Hallucinogens	8.3	1.9	5.9	6.5	3.0	10.0	5.0	0.6	2.2	2.1	2.2	9.0
LSD	7.0	1.3	5.2	3.4	2.5	7.8	3.9	0.3	1.6	1.1	1.9	7.2
Cocaine	11.9	6.1	14.7	15.6	5.8	14.2	9.3	2.6	7.6	8.2	5.7	15.5
Heroin	0.7	0.7	0.9	1.2	0.4	1.5	0.3	0.4	0.4	0.4	0.2	1.0
Other opiates[b]	6.5	1.9	3.2	3.0	3.1	7.4	5.3	1.2	2.1	1.6	2.1	5.7
Stimulants[b]	13.6	4.6	11.3	8.0	5.6	17.0	14.7	3.1	10.1	5.9	7.0	19.4
Sedatives[b]	5.3	2.2	4.7	4.6	3.4	8.8	4.4	1.2	2.7	2.6	2.6	6.4
Barbiturates[b]	4.4	1.9	4.1	4.0	2.6	7.2	3.8	1.1	2.4	2.5	2.3	6.2
Methaqualone[b]	2.5	0.9	1.2	2.3	1.5	4.8	1.4	0.3	0.5	0.5	0.9	2.2
Tranquilizers[b]	5.8	1.7	2.6	3.1	3.2	6.9	5.9	1.4	2.1	4.1	1.8	8.7
Alcohol	88.3	72.5	82.4	80.6	69.3	82.0	88.6	63.9	73.6	77.2	67.5	81.3

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 3—Thirty-Day Prevalence of 14 Types of Drugs, 1985–1989 Data Combined, by Sex and Race

Types of Drugs	Percent who used in last 30 days											
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(29808)	(4499)	(1599)	(712)	(917)	(531)
Marijuana/Hashish	25.0	18.5	22.0	18.9	9.7	27.6	19.8	9.9	13.6	9.6	8.1	23.9
Inhalants[a]	3.4	1.4	2.3	2.0	1.3	5.2	2.0	1.4	2.1	0.8	0.8	0.9
Hallucinogens	3.5	0.9	2.4	3.0	1.5	3.6	1.7	0.3	0.7	0.4	0.3	2.7
LSD	2.8	0.6	1.9	1.6	1.1	3.1	1.1	0.2	0.3	0.2	0.1	2.2
Cocaine	5.6	2.6	8.2	8.1	1.8	7.3	4.1	1.3	3.0	2.9	2.6	9.2
Heroin	0.3	0.5	0.3	0.9	0.1	1.1	0.1	0.3	0.2	0.2	0.0	0.4
Other opiates[b]	2.3	0.9	1.1	1.5	1.6	4.0	1.9	0.6	0.7	0.5	0.7	2.4
Stimulants[b]	5.6	1.9	4.9	3.1	2.1	8.1	6.0	1.3	4.8	1.2	3.6	10.3
Sedatives[b]	2.2	1.1	2.0	1.8	1.9	4.8	1.7	0.5	0.9	1.3	1.3	2.6
Barbiturates[b]	1.8	0.9	1.7	1.3	1.4	3.7	1.5	0.5	0.8	1.2	1.0	2.1
Methaqualone[b]	0.9	0.5	0.6	0.9	0.8	2.5	0.5	0.1	0.2	0.1	0.6	0.9
Tranquilizers[b]	1.9	0.8	0.8	0.6	1.7	3.1	2.0	0.5	0.9	1.5	0.9	2.2
Alcohol	72.3	49.2	65.0	55.4	43.7	69.0	66.6	32.8	50.5	43.0	34.2	60.2
Cigarettes	29.8	15.6	23.8	22.0	16.8	36.8	34.0	13.3	18.7	24.7	14.3	43.6

[a]Data based on four questionnaire forms. N is four-fifths of N indicated.
[b]Only drug use which was not under a doctor's orders is included here.

TABLE 4—Daily Use of Three Types of Drugs in the Last 30 Days, 1985–1989 Data Combined, by Sex and Race

Types of Drugs	Percent who used daily in last 30 days											
	White Male	Black Male	MexAm Male	PR&LA Male	Asian Male	Nat Am Male	White Female	Black Female	MexAm Female	PR&LA Female	Asian Female	Nat Am Female
Minimum N =	(28056)	(3688)	(1518)	(680)	(982)	(537)	(29808)	(4499)	(1599)	(712)	(917)	(531)
Marijuana/Hashish	5.1	2.8	4.2	3.5	1.7	8.2	2.1	0.9	1.1	0.5	0.5	4.3
Alcohol												
Daily	7.0	4.2	8.3	4.0	2.3	10.1	2.8	0.7	2.6	0.9	0.9	5.4
5+ drinks in a row/last 2 weeks	48.1	24.0	45.3	31.4	19.4	48.1	31.3	9.3	23.6	14.5	10.7	33.7
Cigarettes	18.8	8.6	11.6	13.3	9.0	26.0	22.5	7.1	8.1	13.3	9.4	33.8
Half-pack or more per day	12.5	3.3	5.2	6.1	4.4	18.4	13.3	2.2	2.5	4.2	4.5	23.4

males; rates for Whites are fairly similar to those for Hispanics, except that the difference is somewhat smaller between males and females; and rates are significantly lower for Blacks and Asian Americans. In the case of Asian Americans, prevalence rates for males and females are essentially the same; however, for Blacks, like Hispanics, the prevalence is about twice as high for males as for females.

Other Illicit Drugs

Tables 2 and 3 provide details on a number of other illicit drugs: inhalants, hallucinogens, heroin, other opiates, stimulants, sedatives, and tranquilizers (any use under doctor's orders is excluded). For most drugs and most subgroups, fewer females than males report use, with usage rates being highest for Native American seniors, and lowest for Black and Asian American seniors. Differences among White and Hispanic seniors are generally smaller and not consistent across these other illicit drugs.

Alcohol

Alcohol use among White and Native American males and females is relatively high, while among Black and Asian American seniors, only about half of the males and one-third of the females report use of alcohol during the past month. Substantial subgroup differences exist in frequent or heavy use of alcohol (i.e., five or more drinks in a single sitting). As shown in Table 4, almost half of White, Native American, and Mexican American males report such heavy alcohol use once or more during the two weeks preceding the survey. Heavy drinking is significantly less prevalent among Puerto Rican and other Latin American males, and even lower among Black males and Asian American males. Racial/ethnic differences among females generally parallel those for males, but at distinctly lower prevalence levels. Although relatively few seniors drink alcohol on a daily or near daily basis, this behavior shows subgroup differences which parallel those for heavy drinking (Table 4).

Cigarettes

About two-thirds of all seniors have tried cigarettes sometime in their lives;[2] however, the much more important measures are those reflecting their current behavior: monthly prevalence (Table 3), and especially daily prevalence and half-pack-a-day use (Table 4). Half-pack daily use is highest among Native American seniors, significantly lower among Whites, and far lower among the other subgroups. In contrast to most other drugs, cigarettes have been used just as much by young women as by young men in recent years.

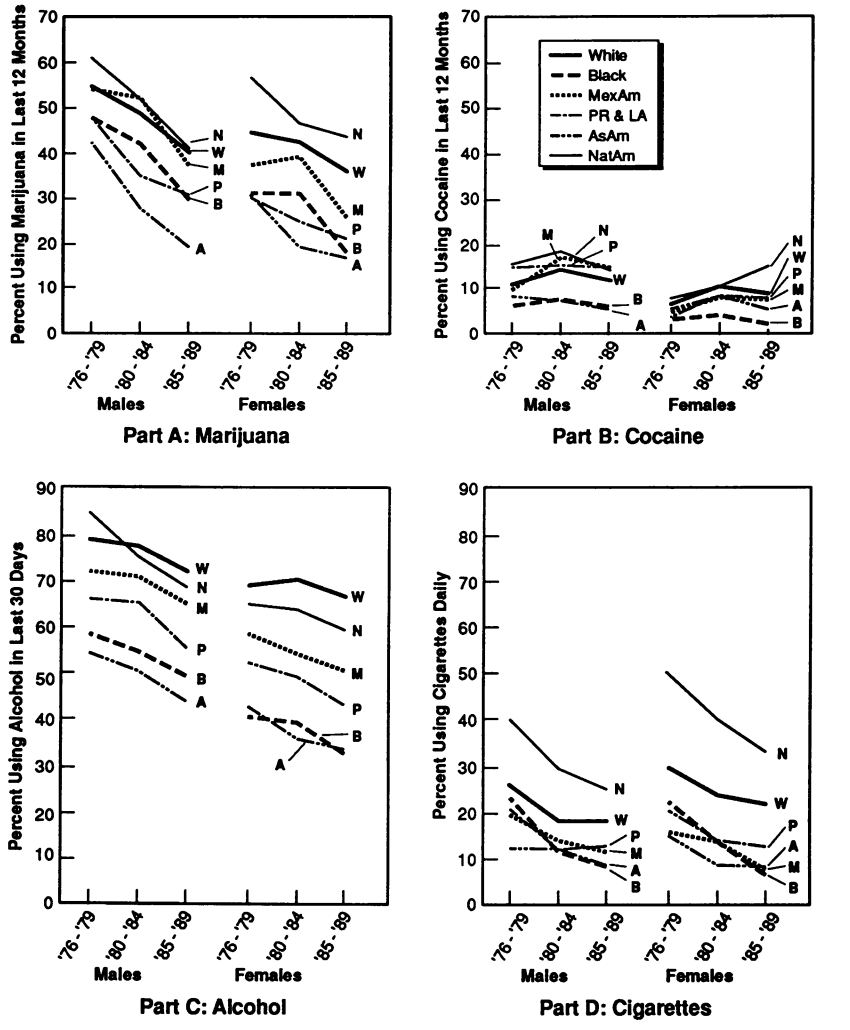

FIGURE 1—Trends in Use of Four Drugs, 1976–89, by Sex and Race

Trends in Prevalence of Drug Use, 1976–89

There have been a number of important increases and decreases in the use of various drugs since the mid-1970s, as we have reported in detail elsewhere.[2,7] Our purpose here is to consider whether some of the most important racial/ethnic subgroup distinctions observed in the classes of 1985–89 are relatively long-standing ones or reflect recent changes.

Illicit Drugs. Part A of Figure 1 shows that the downward trend in annual marijuana use occurred within all subgroups, and that subgroup differences were fairly consistent across time. Part B of Figure 1 shows the overall rise in cocaine use between the late 1970s and the early 1980s; the patterns of subgroup differences are not so consistent across time, but because of the generally small proportions of cocaine users we cannot be very confident in asserting different subgroup trends across time. Use of most of the other illicit drugs shown in Tables 2 and 3 declined during the past decade[2]; here again, the generally low proportions of users provide little basis for asserting *differential* subgroup trends across time. (Data for the earlier time periods are presented elsewhere.[8])

Alcohol. As Part 3 of Figure 1 indicates, 30-day prevalence of alcohol use has declined somewhat, especially among males, but subgroup differences were largely consistent across time.

Cigarettes. As shown in Part D of Figure 1, prevalence rates for daily use of cigarettes have declined for all subgroups. Substantial declines occurred between 1976–79 and 1980–84, whereas declines in recent years have been much smaller. Some groups (e.g., White males) showed no decline in recent years. In general, the declines in smoking have been stronger among non-White groups. Most notably, daily smoking prevalence rates of Black seniors dropped by two-thirds (from 23.6 percent to 8.6 percent for males, and 22.3 percent to 7.1 percent for females). Thus, Black-White differences in cigarette smoking have become more pronounced in recent classes of high school seniors.

Discussion

Although relatively little research compares drug use among racial/ethnic subgroups, the existing studies[7,9–20] yield a fairly consistent set of findings: Asian American youth tend to report very low levels of drug use relative to other groups. Black youth consistently report lower rates of drug use than White youth. Hispanic youth typically report more substance use than Blacks and only slightly less than Whites. Native American youth on average report greater use of alcohol and other drugs than any other subgroup.

The present findings are largely consistent with the literature. One contribution of the present research has been to document these differences based on large, nationally representative samples of high school seniors. Another contribution has been to demonstrate that for more than a decade the racial/ethnic subgroups have shown parallel trends, for the most part, in their use of alcohol and the illicit drugs. An important divergence in smoking rates (smaller declines among Whites) also has been noted.

Several important questions remain. First, are these replicated (and thus *reliable*) findings of subgroup differences also *valid*? In other words, how accurate are young people's self-reports of drug use in general, and are there reasons to suppose that subgroups may differ in accuracy? Second, how do the subgroups differ in dropout rates, and how do these differences affect our ability to generalize to total age cohorts? These are issues which have concerned us for some time, and they have made us cautious about reporting subgroup differences in drug use.[4] Although we have not fully resolved these questions, we have become increasingly confident that the subgroup differences reported here are, on the whole, valid.

First, with respect to self-reports of drug use, there is a growing literature indicating their validity.[21–25] Some questions may remain, of course, about the willingness of seniors to report their drug use honestly if they are not confident about the purposes of the research, if they do not trust the survey administrators,

and/or if they have greater than average tendencies toward favorable self-presentation. Mensch and Kandel report that in the National Longitudinal Survey of Youth, which employed face-to-face interviews, Black and Hispanic youth were more likely than White youth to underreport their use of marijuana; however, this underreporting occurred most often at the lowest levels of use.[26] Incidentally, their initial analyses (based on total samples) revealed no underreporting of the licit drugs (i.e., alcohol and cigarettes), which show the largest subgroup differences in the present study.

Earlier analyses of Monitoring the Future data[8] revealed subgroup differences in rates of missing data and inconsistent responses; however, these differences do not parallel the subgroup differences in self-reported drug use. For example, Native American seniors have relatively high rates of missing data and/or inconsistent responses (6.6 percent for marijuana) as well as high self-reported drug use, whereas Black seniors have equally high rates of missing data and/or inconsistent responses (6.8 percent for marijuana), but much lower self-reported drug use. White and Asian American seniors are fairly similar in having low rates of missing data and/or inconsistent responses (2.3 percent and 3.1 percent, respectively, for marijuana), but their rates of drug use are distinctly different.

Additional analyses of Monitoring the Future data have shown that Blacks are more likely than Whites to perceive that drug use involves high risks, and to disapprove of drug use. Black seniors also are much less likely to report smoking, alcohol use, and drunkenness by friends, consistent with the large Black-White differences in self-reported drug use.* It is hard to imagine that these complexly interrelated findings are simply the result of selective distortion; in particular, it is unlikely that such distortion would result in much larger differences in self-reported use of the licit drugs compared with the illicit drugs. We find it more parsimonious to conclude that the substantial Black-White differences in self-reports are largely the result of genuine differences in drug use between our samples of Black and White high school seniors.

Even if self-reports are mostly valid across all of the subgroups studied, we are faced with further questions because our surveys do not include young people who drop out of high school before late spring of their senior year. Given that drug use is generally higher among dropouts, how different would findings be if based on the total cohort of 17- to 18-year-olds rather than just high school seniors? It is highly likely that the inclusion of dropouts would tend to raise the observed prevalence rates for all drugs and all subgroups. In addition, it seems fairly likely that the impact would be greatest in subgroups with high dropout rates, thus changing subgroup comparisons in several respects. First, Hispanics have higher than average dropout rates;[6] therefore, comparisons of *all* White and Hispanic 17- to 18-year-olds would probably yield somewhat smaller differences in drug use than found in samples of seniors. Second, Asian Americans have lower than average dropout rates[6]; accordingly, this subgroup might be even farther below average given drug use data based on the total age cohort rather than just seniors. Third, given the very high dropout rates among Native Americans,[6] total age cohort data might place them even farther above average in drug use. Fourth, Black-White differences in drug use might be reduced if we compared the total age cohort rather than just seniors; however, because Black and White dropout rates are now fairly similar,[6] the reduction would not be very large, unless drug use is differentially correlated with dropping out. It is also worth noting that recent household surveys, which do not omit dropouts, find Black-White differences in youthful drug use roughly as large as those reported here.[7]

If drug use really is lower than average among most non-White youth, an interesting question remains as to why this occurs. Multivariate analyses reported elsewhere[8] indicate that it cannot be attributed primarily to differences in parental presence or education, nor does it have a great deal to do with where seniors live throughout the United States. Some other dimensions of lifestyle we have measured have more bearing on drug use, but they do not account for most of the subgroup differences in use—especially the very low rates of cigarette and alcohol use by Blacks. Other possibilities which we have begun to explore, and will continue to examine, are that these relatively low usage rates are strongly influenced by particular religious doctrines and affiliations; differences in parent, peer, and community norms; different attitudes regarding the use of drugs; or differing levels of perceived risk.

The very low rates of drug use (particularly cigarette use and alcohol use) by Black students may be surprising, in light of evidence that drug-related mortality and morbidity are higher among Black than White adults.[1] These contrasting findings are, however, consistent with data from national household surveys comparing Blacks and Whites at various age levels: Black youth show much lower usage rates than White youth; in early adulthood differences are smaller; and by middle adulthood, the drug use/abuse rates are often higher among Blacks.[7,27,28]

It has been observed that "two worlds" of drug use (particularly alcohol use) exist within the Black community: the extremes of abstinence at one end and heavy use/abuse at the other.[27,29] As a result of heavy drug use by a minority (often having limited financial resources, health care, and insurance), Black adults are disproportionately represented in morbidity and mortality statistics, and data from public treatment centers. Such data, rather than findings from general population surveys, often serve as the basis for

Appendix

Measures

The use of alcohol and the use of each of the illicit drugs are measured by questions having the following format: On how many occasions (if any) have you used [name of drug category] . . .

a) . . . in your lifetime?
b) . . . during the last 12 months?
c) . . . during the last 30 days?

Seven response categories are available: 0 occasions; 1–2; 3–5; 6–9; 10–19; 20–39; 40 or more occasions. Annual and monthly prevalence refer to any use of the specific substance during the last 12 months, or the last 30 days, respectively. Daily prevalence refers to use on 20 or more occasions in the last 30 days. An additional question about heavy use of alcohol asks respondents how many times in the last two weeks they had five or more drinks in a row. Cigarette use is measured by a question which asks about use in the past 30 days (none, less than 1 cigarette per day, 1–5 cigarettes per day, about ½ pack per day, about 1 pack per day, about 1½ packs per day, 2 or more packs per day). There is a good deal of inferential data in support of the validity of such self-report measures of drug use, summarized elsewhere.[2,21–25]

The measure of racial/ethnic identification is based on the questionnaire item: "How do you describe yourself? 1. American Indian; 2. Black or Afro-American; 3. Mexican American or Chicano; 4. Puerto Rican or other Latin American; 5. Oriental or Asian American; 6. White or Caucasian; 7. Other."

conclusions about drug use among Black Americans. Our present findings clearly suggest that such data bases are too limited, and can yield a false picture of the subgroup as a whole.

But it is equally true that general population surveys do not provide an adequate basis for generalizations about the full range of drug use problems among Blacks, Whites, or any other racial/ethnic subgroup. Persons in drug treatment, the homeless, and those in prison are not represented in general population surveys. Additionally, dropouts, youth who are chronically absent, those in juvenile detention centers, and those who are homeless, are not well represented in samples of high school students. Here again, because minority group members make up disproportionate shares of most or all of these "high risk" populations, and because the levels of drug use in these populations are greater than average, it is widely believed that drug use is more pervasive among minorities than among Whites. While that remains a possibility among the dropouts, it now seems quite unlikely among young people who complete high school.

In sum, we are confronted with (at least) two worlds of drug use *data*. On the one hand, the findings from general population and school-based surveys clearly and consistently show relatively low levels of drug use by most non-White youth, especially Black Americans and Asian Americans. On the other hand, the public health statistics on mortality, morbidity, and treatment provide a somewhat different perspective. So perhaps our most important conclusion must be that neither form of data provides a complete picture of drug use. However, that should not overshadow the other important conclusion: the majority of non-White youth do complete high school, and among most of these individuals, usage rates for both illicit and licit drugs are lower than average. □

Acknowledgments

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